

Geriatric Pharmacology

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Presenter Disclosure Statement

- I have no relevant financial interest or other relationship with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services that are discussed in this activity to disclose.

Objectives

- At the conclusion of this presentation, participants should be able to:
 - Identify characteristics of medication use in older adults.
 - Describe recently published practice guidelines and clinical evidence.
 - Apply clinical evidence and practice guidelines to an older adult patient case scenario.

Characteristics of Medication Use in Older People

- Patient specific responses to medications become more complex as patients age.
 - Medication response based upon pharmacokinetics (absorption, distribution, metabolism, excretion) and pharmacodynamics can be altered due to physiologic changes.

Characteristics of Medication Use in Older People

- Older people are at great risk for Adverse Drug Reactions (ADRs)
 - “An appreciably harmful or unpleasant reaction, resulting from an intervention related to the use of a medicinal product, which predicts hazard from future administration and warrants prevention or specific treatment, or alteration of the dosage regimen, or withdrawal of the product.” (Edwards & Aronson, p. 1255)
- Older people are also at risk of experiencing inappropriate prescribing, polypharmacy, missing appropriate therapy, and medication nonadherence.

Edwards IR, Aronson JK. Adverse drug reactions: definitions, diagnosis, and management. 2000 *Lancet*; 356: 1255-59.

Shehab N, Lovegrove MB, Geller AI, Rose K, Weidle NJ, Budnitz DS. US Emergency Department Visits for Outpatient Adverse Drug Events, 2013-2014 2016 *JAMA*;316(20):2115-2125. doi:10.1001/jama.2016.16201

Oscanoa TJ, Lizaraso F, Carvajal A. Hospital admissions due to adverse drug reactions in the elderly. A meta-analysis. 2017 *Eur J Clin Pharmacol*; 73:759-770.

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Recently published clinical evidence
surrounding medication use in older adults

Clinical Scenario



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- A 76 year old female presents to your clinic to establish care. She currently lives independently in the community in her home. As part of her visit today, her medications are reviewed for appropriateness.
- PMH
 - HTN, diagnosed May 2003, inadequately treated until 2013
 - Dyslipidemia, diagnosed May 2008
 - Type 2 DM, diagnosed May 2010, patient is resistant to injectable medication use
 - Osteoarthritis, diagnosed June 2002
 - Generalized Anxiety Disorder, diagnosed June 2022

Clinical Scenario

Vital Signs and Lab Values

- BP 132/82 mmHg (sitting, L arm) BP 128/76 mm Hg (standing, L arm), P 81 bpm, RR 15, T 98.2°F, Wt. 58 kg, Ht 5'6"
- BMP (today):

Na	138 mEq/L
K	4.1 mEq/L
Cl	103 mEq/L
CO ₂	27 mEq/L
Glu	130 mg/dL
Calcium, serum	9.1 mg/dL
BUN	16 g/dL
SCr	1.2 mg/dL
- TSH (today): 2.1 mU/L
- Fasting Lipid Panel (today): TC: 202 mg/dL, HDL 35 mg/dL, LDL 102 mg/dL, TG 160 mg/dL
- HbA_{1c} (today): 7.6%
- Vitamin B12 level (today): 422 pg/mL

Current Medications

- Hydrochlorothiazide 25 mg by mouth daily
- Lisinopril 20 mg by mouth daily
- Atorvastatin 20 mg by mouth daily
- Metformin 1000 mg by mouth BID
- Glyburide 1.25 mg by mouth daily
- Escitalopram 10 mg by mouth daily
- Naproxen 500 mg po once daily as needed for pain
- ASA 81 mg by mouth daily
- Ibuprofen 200 mg by mouth every 4-6 hours as needed for pain
- Calcium Carbonate 600 mg/Vitamin D3 400 IU by mouth twice daily
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Would this older adult patient be a good candidate for an SGLT-2 inhibitor?



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Standards of Care in Diabetes- 2023

- ElSayed NA, Aleppo G, Aroda VR, et al. 9. Pharmacologic Approaches to Glycemic Treatment: *Standards of Care in Diabetes—2023*. *Diabetes Care*. 2023;46(Supplement_1):S140-S157. doi:[10.2337/dc23-S009](https://doi.org/10.2337/dc23-S009)
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SGLT-2 Inhibitor Use in Older Adults

- Patorno E, Pawar A, Bessette LG, et al. Comparative Effectiveness and Safety of Sodium-Glucose Cotransporter 2 Inhibitors Versus Glucagon-Like Peptide 1 Receptor Agonists in Older Adults. *Diabetes Care*. 2021;44(3):826-835. doi:[10.2337/dc20-1464](https://doi.org/10.2337/dc20-1464)
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Is this patient a good candidate for low dose
ASA daily?



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ASA use in Older Adults

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- US Preventive Services Task Force, Davidson KW, Barry MJ, et al. Aspirin Use to Prevent Cardiovascular Disease: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2022;327(16):1577. doi:[10.1001/jama.2022.4983](https://doi.org/10.1001/jama.2022.4983)

Should this patient be on Hydrochlorothiazide
or Chlorthalidone?



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Treating Hypertension

- Ishani A, Cushman WC, Leatherman SM, et al. Chlorthalidone vs. Hydrochlorothiazide for Hypertension-Cardiovascular Events. *N Engl J Med*. 2022;387(26):2401-2410. doi:[10.1056/NEJMoa2212270](https://doi.org/10.1056/NEJMoa2212270)
- Peters R, Xu Y, Fitzgerald O, et al. Blood pressure lowering and prevention of dementia: an individual patient data meta-analysis. *European Heart Journal*. 2022;43(48):4980-4990. doi:[10.1093/eurheartj/ehac584](https://doi.org/10.1093/eurheartj/ehac584)

Should this patient continue her current vitamins, minerals, and/or supplements?

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Vitamins, Minerals, Supplements

- Fravel MA, Ernst ME, Gilmartin-Thomas J, et al. Dietary supplement and complementary and alternative medicine use among older adults in Australia and the United States. *J American Geriatrics Society*. Published online February 28, 2023:jgs.18305. doi:[10.1111/jgs.18305](https://doi.org/10.1111/jgs.18305)
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What other medication changes could be considered in this patient?

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